

1.1 Purpose of the ASIP

The South Delta Improvements Program (SDIP) Action Specific Implementation Plan (ASIP) serves as the biological assessment (BA) for compliance with Section 7 of the federal Endangered Species Act (ESA) and also serves as the mitigation plan to support a 2081 permit application for compliance with the California Endangered Species Act (CESA). The ASIP is consistent with the *Multi-Species Conservation Strategy for the CALFED Bay-Delta Program* (MSCS) (CALFED Bay-Delta Program 2000a) and with the requirements of the programmatic CALFED Bay-Delta Program (CALFED Program) compliance documents and agreements for the ESA and CESA.

The purpose of this ASIP is to provide U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) with the information necessary to enter into consultation on Stage 1 of the SDIP for federally listed species. Another purpose of this ASIP is to provide the California Department of Fish and Game (DFG) with the information necessary to issue a permit and consistency determination to comply with CESA.

This ASIP provides the USFWS and NOAA Fisheries with the information needed to:

- determine the likelihood for Stage 1 of the SDIP to jeopardize the continued existence of a federally listed species by affecting survival, growth, reproduction, or migration (e.g., spawning and rearing habitat area, migration habitat conditions, food availability, entrainment) or result in the destruction or adverse modification of designated critical habitat for federally listed species;
- issue incidental take authorizations under Section 7 of the ESA for the five species (Table 1-1) covered under the *U.S. Fish and Wildlife Service Programmatic Biological Opinion on the CALFED Bay-Delta Program* (USFWS Programmatic Biological Opinion [BO]) (CALFED Bay-Delta Program 2000b) that could be affected by Stage 1 of the SDIP; and
- issue incidental take authorizations under Section 7 of the ESA for the four species (Table 1-1) covered under the *National Marine Fisheries Service*

CALFED Bay-Delta Program Programmatic Biological Opinion (NOAA Fisheries Programmatic BO) (CALFED Bay-Delta Program 2000b) that could be affected by Stage 1 of the SDIP.

This ASIP provides DFG with the information needed to:

- determine whether impacts on the state-listed species would be fully mitigated following implementation of Stage 1 of the SDIP and its related environmental commitments,
- issue incidental take authorization under Section 2081(b) of the California Fish and Game Code for those species that are state-listed but not federally listed, and
- issue a consistency determination under Section 2080.1 of the California Fish and Game Code for those species that are both federally and state-listed, based on the BOs that USFWS and NOAA Fisheries will issue through the Section 7 consultations on this ASIP.

These incidental take authorizations are requested for the 30-year term of the CALFED Program. The ASIP also provides information and conservation measures necessary to address impacts of Stage 1 of the SDIP implementation on species managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and essential fish habitat (EFH), as described below under Essential Fish Habitat.

1.2 Terminology

Keys terms used in this ASIP are defined below.

- *Programmatic BOs* refers to both the USFWS Programmatic BO and the NOAA Fisheries Programmatic BO for the 2000 CALFED Bay Delta Program (ROD and MSCS).
- *ASIP-covered species* refers to the species covered under the Programmatic BOs and the state-listed species that could be affected by Stage 1 of the SDIP (Table 1-1).
- *ASIP-covered natural communities* refers to the natural communities that provide habitat to listed species that could be affected by Stage 1 of the SDIP (includes both natural habitats and fish groups) (Table 1-2).

Table 1-1. Species Assessed in the SDIP ASIP

ASIP-Covered Species	MSCS Species Goals ^a	ASIP Coverage—Agency Responsibility ^b		
		USFWS	NOAA Fisheries	DFG
Mammals				
Riparian brush rabbit	r	X		X
San Joaquin kit fox	m	X		X
Birds				
California black rail	r			X
Greater sandhill crane	r			X
Bank swallow	r			X
Swainson’s hawk	r			X
White-tailed kite	m			X
Reptiles				
Giant garter snake	r	X		
Fish				
Central Valley spring-run Chinook salmon ESU	R		X	X
Central Valley steelhead ESU	R		X	
Delta smelt	R	X		X
Green sturgeon	R		X	
Sacramento River winter-run Chinook salmon ESU	R		X	
English sole (essential fish habitat)			X	
Starry flounder (essential fish habitat)			X	
Invertebrates				
Valley elderberry longhorn beetle	R	X		
Plants				
Mason’s lilaeopsis	R			X
Delta coyote-thistle	r			X

DFG = California Department of Fish and Game.

ESU = evolutionarily significant unit.

MSCS = Multi-Species Conservation Strategy.

NOAA Fisheries = National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

USFWS = U.S. Fish and Wildlife Service.

^a Species Goals:

R = Recover. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.

r = Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.

m = Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED Bay-Delta Program actions will be fully offset through implementation of actions beneficial to the species.

^b The determination of agency responsibility for the ASIP is based on the programmatic coverage determination for each species.

Table 1-2. Natural Communities Present in the SDIP Project Area

Natural Communities	Habitat Subtypes Present in Restoration Project Area ^a	MSCS Habitat Goal
Natural Habitats		
Tidal perennial aquatic	Tidal perennial aquatic	Substantially increase extent and quality
Tidal freshwater emergent	Tule and cattail tidal emergent wetland	Substantially increase extent and quality
Valley/foothill woodland and forest	Cottonwood-willow woodland Valley oak riparian woodland Riparian scrub Willow scrub	Substantially increase extent and quality
Upland cropland	Row crops Pastureland	Protect, enhance, and restore
Fish Groups		
Estuarine fish species ^b	Not applicable	Substantially increase extent and quality
Anadromous fish species ^b	Not applicable	Substantially increase extent and quality
MSCS = Multi-Species Conservation Strategy.		
^a Habitat subtypes are addressed in the ASIP because they are consistent with the MSCS NCCP communities.		
^b The natural communities associated with these fish groups are tidal perennial aquatic and tidal freshwater emergent.		

- *Study area* is the area covered by the U.S. Geological Survey (USGS) quadrangles that were surveyed as part of the California Natural Diversity Database (CNDDDB) search and includes those areas in which the California Department of Water Resources (DWR) performed vegetation mapping and wildlife and botanical surveys (Figure 1-1). These quadrangles are the Woodward Island, Holt, Clifton Court Forebay (CCF), Union Island, Lathrop, and Stockton West 7.5-minute quadrangles. The study area corresponds to the ESA Section 7 term “action area,” which is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations [CFR] 402.02).
- *Project area* is the area within the footprint of the proposed gates, the channel dredging areas, the temporary spoils ponds and spoils drying areas, the permanent runoff management basins, and the mitigation sites (pending). The project area is the geographic extent of the analysis of impacts that could be associated with implementing Stage 1 of the SDIP (Figure 1-1). It is the area in which SDIP-related activities will be implemented and within which ASIP-covered species and natural communities could be affected by Stage 1 of SDIP.

1.3 Description of the South Delta Improvements Program

The SDIP components are intended to meet the project objectives and purpose by balancing the need to improve conditions for migratory Central Valley fall-/late fall-run Chinook salmon in the San Joaquin River and water quality and quantity for local agricultural diverters, with the need to increase the current permitted rate of diversion into CCF as described in D-1641 (to allow maximum pumping at SWP Harvey O. Banks Pumping Plant (Banks) from 6,680 cfs up to 8,500 cfs). The SDIP objectives and purpose are discussed in Chapter 2.

The SDIP (Stages 1 and 2) consists of the following components, which are discussed further in Chapter 2.

The Stage 1 decision includes the following actions:

- construction of a fish control gate at the head of Old River to improve conditions for salmonids and other fish species migrating in the San Joaquin River;
- construction and operation of three flow control structures (gates) to improve existing water level and circulation patterns for south Delta water users:
 - Middle River flow control gate (near the confluence of Middle River with Victoria Canal),
 - Grant Line Canal flow control gate (near the confluence of Grant Line Canal and Old River), and
 - Old River flow control gate (east of the Delta-Mendota Canal [DMC] approximately 4,000 feet southeast of the intersection of the Alameda, Contra Costa, and San Joaquin County lines);
- dredging various channels in the south Delta to improve conveyance; and
- extension of up to 24 agricultural diversion intake facilities.

The Stage 2 decision includes the following actions:

- modification of operations to increase the maximum diversion rate into CCF up to 8,500 cfs (on a 7-day average basis);
- implementation of an interim operations regime between December 15 and March 15 until the permanent gates are fully operable to achieve:
 - maximum diversions of 6,680 cfs plus one-third the flow of the San Joaquin River when flows at Vernalis are greater than 1,000 cfs or
 - maximum diversions of up to 8,500 cfs when 1) water quality standards (salinity at south Delta stations as defined by D-1641) are met and the dissolved oxygen (DO) in the San Joaquin River at Stockton is at or above the objective of 5 milligrams per liter (mg/l); 2) the south Delta water levels are at least 0.0 feet above mean sea level (msl); 3) there

would be no unacceptable impacts on special-status species; and 4) there would be no impact on Environmental Water Account (EWA).

This ASIP identifies and assesses the SDIP impacts related to Stage 1 actions that have not already been addressed with previous consultation as described below. Therefore, this ASIP assesses impacts resulting from gate construction and operation, and channel dredging on ASIP-covered species. As described below, consultation under Section 7 of the ESA pertaining to the impacts of SDIP water supply operations, including interim operations, will be completed under the Operations Criteria and Plan (OCAP) BOs. Consultation related to the extension of agricultural diversions has been completed under existing BOs and agreements. Effects on state-listed species from operations beyond SDIP Stage 1 will be addressed in the future through the necessary CESA compliance. Therefore, this ASIP addresses only the impacts of fish control and flow control gate construction and operation and channel dredging on federally and state-listed species.

1.4 Related Consultation and Analysis

1.4.1 OCAP Early Consultation

The USFWS and NOAA Fisheries each published BOs for the OCAP BA (Bureau of Reclamation 2004; U.S. Fish and Wildlife Service 2004; U.S. Fish and Wildlife Service 2005; NOAA Fisheries 2004) describing the current and future operation of the CVP and SWP (including 8,500 cfs maximum diversion). The OCAP BA, therefore, included the operational component of the SDIP. However, the OCAP BA did not include a description of the effects on green sturgeon resulting from implementation of the operational component because the green sturgeon was not proposed for listing at the time. The resulting OCAP BOs identified incidental take associated with SDIP-related operations (excluding green sturgeon), as well as corresponding conservation measures.

The OCAP BOs have two separate impacts sections: one for formal consultation and one for early consultation. In addition, there is an incidental take for formal consultation and a preliminary incidental take for early consultation. Early consultation impacts include the impacts of operations of the SDIP operational component. These operations include:

- diverting a maximum of 8,500 cfs into CCF at SWP Banks,
- operating permanent tidal gates in the south Delta with an increased export limit (relative to tidal flows and water quality changes),
- implementing the long-term (i.e., expanded) EWA,
- facilitating water transfers in the July-September period, and
- integrating the operations of the CVP and SWP.

The OCAP BOs include a preliminary impacts determination and take statement for the early consultation items described above. An early consultation, as stated in USFWS regulations, “is designed to reduce the likelihood of conflicts between listed species or critical habitat and proposed actions and occurs prior to the filing of an application for a Federal permit or license.” The early consultation resulted in preliminary BOs, but the incidental take statement provided for the early consultation does not constitute authority to take listed species.

Because the OCAP BO’s address Stage 2 of SDIP, DWR and Reclamation will use these BOs for consultation for the operational component. At that time, the USFWS and NOAA Fisheries will re-examine the project description and impacts of Stage 2 of the SDIP and in the OCAP BOs. If the project description and impacts on the delta smelt and listed salmonids are the same as described in the early consultation impacts section of the BOs, the USFWS and NOAA Fisheries will formalize the early consultation portion of the BOs. If there are additional impacts or project elements that are not addressed in the early consultation section of the BOs (including green sturgeon), DWR and Reclamation will reinitiate consultation on the OCAP BOs to cover impacts on delta smelt, listed salmonids, and any other applicable species.

Additionally the SDIP includes a commitment to continue the existing operation of providing 500 cfs of export capacity in July, August, and September for EWA transfers. Formal consultation in the OCAP BOs included this action. DFG has issued a consistency determination with the USFWS opinion that authorizes the additional 500 cfs pumping.

The OCAP BOs do not address impacts on terrestrial species because there are no federally listed terrestrial species that would be affected by the operations described in OCAP. However, DFG did not provide a formal determination of the impacts of OCAP operations on state-listed wildlife and plant species; therefore, the potential impacts of operations on state-listed species were not addressed. This ASIP, therefore, addresses the operational impacts on state-listed wildlife and plant species.

1.4.2 Dredging and Extension of Agricultural Diversions

Spot dredging for maintenance of existing agricultural diversions has been addressed in the BO issued by the USFWS for the South Delta Temporary Barriers Project (U.S. Fish and Wildlife Service 2001). NOAA Fisheries issued BOs for the South Delta Diversions Dredging and Modification Project (NOAA Fisheries 2003) and the South Delta Temporary Barriers Project (National Marine Fisheries Service 2001). The NOAA Fisheries BO is programmatic and effective for 5 years. A Streambed Alteration Agreement (BD-2002-0002) was issued by the DFG for dredging and modification of selected diversions in the south Delta. These documents address actions related to both the dredging and modification of the existing agricultural siphons and pumps in the south Delta.

Therefore, this ASIP does not contain additional consultation related to these actions.

1.5 Summary of Stage 1 Implementation

Stage 1 would include constructing and operating permanent gates, and dredging. (Extension of agricultural diversions is also a Stage 1 action, but BOs and a Streambed Alteration Agreement (SAA) have been issued for this action, and it is therefore not discussed further in this ASIP.) The existing regulations, monitoring programs, and implementation of adaptive management would continue as part of Stage 1. New information obtained through the monitoring and adaptive management processes would be incorporated into the operation of the gates as described in Chapter 8.

1.6 South Delta Improvements Program Implementing Entities

Reclamation and DWR are the lead agencies under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) and are also the SDIP project proponents.

1.7 Relationship of the SDIP ASIP to the CALFED Programmatic Documents

Five documents establish the CALFED Program's compliance with the ESA, CESA, and NCCPA: the MSCS, the USFWS Programmatic BO, the NOAA Fisheries Programmatic BO, the Programmatic NCCP Determination, and the *Conservation Agreement Regarding the CALFED Bay-Delta Program Multi-Species Conservation Strategy* (Conservation Agreement). These documents are briefly described below.

- The MSCS is a technical appendix to the Programmatic EIS/EIR that explains how the CALFED Program will meet the requirements of the ESA, CESA, and the NCCPA. The SDIP EIS/EIR and ASIP stand alone and include an independently developed analysis of the impacts of the SDIP and avoidance, minimization, and compensation measures to mitigate those impacts. The MSCS was used in this ASIP only to provide guidance for developing mitigation for the impacts of the SDIP on ASIP-covered species and natural communities. The MSCS served as the:
 - ❑ CALFED Programmatic BA under Section 7 of the ESA and
 - ❑ NCCP under the NCCPA (Fish and Game Code 2800).

The MSCS conservation measures include measures to avoid, minimize, and compensate for the impacts of the CALFED Program project actions. A compensation conservation measure is a type of mitigation measure that replaces an affected resource value.

- The USFWS Programmatic BO covers 90 ESA-listed, proposed, and candidate species that were evaluated in the MSCS.
- The NOAA Fisheries Programmatic BO covers four ESA-listed fish species that were evaluated in the MSCS.
- The Programmatic NCCP Determination covers 79 species, including 25 species covered under the Programmatic BOs, that were evaluated in the MSCS.
- The Conservation Agreement is an agreement entered into by the CALFED agencies that ensures that the MSCS will be implemented in a manner consistent with the statutory authority of each signatory agency. The Conservation Agreement includes a commitment that a CALFED project proponent and lead agencies (if different from the project proponent) will prepare an ASIP if the project could affect a species covered under the Programmatic BOs or NCCP Determination.

Mitigation measures presented in the ASIP are consistent with the following programmatic conservation measures in the MSCS:

- measures necessary to meet the requirements of the Programmatic BOs and
- conservation measures to avoid, minimize, and compensate for impacts on ASIP-covered species.

1.8 SDIP ASIP Process

The MSCS and other program-level documents require that CALFED project proponents and lead agencies (if different from the project proponent) coordinate preparation of ASIPs with the USFWS, NOAA Fisheries, and DFG. This coordination initiates informal consultation under Section 7 of the ESA. The purpose of this coordination is to ensure that the ASIP incorporates appropriate conservation measures consistent with requirements of the MSCS.

To facilitate coordinating preparation of the ASIP, the lead agencies for the SDIP established an Interagency ASIP team composed of representatives from DWR, Reclamation, USFWS, NOAA Fisheries, and DFG. An objective of the lead agencies in establishing the ASIP team was to identify and address USFWS, NOAA Fisheries, and DFG requirements for successfully compensating for project impacts early in the process and, thus, avoid the likelihood that additional measures would be required as terms and conditions of the SDIP BOs and DFG-issued take authorizations per the California Fish and Game Cod. DWR and Reclamation were responsible for preparing the ASIP. USFWS, NOAA Fisheries, and DFG were primarily responsible for:

- providing input on project design to avoid or minimize impacts;
- providing information relevant to conducting the assessment of impacts on ASIP-covered species;
- reviewing and providing input to proposed impact assessment methods;
- reviewing results of the impact assessment;
- reviewing and providing input on proposed conservation measures to avoid, minimize, and compensate for impacts on ASIP-covered species; and
- reviewing ASIP sections for consistency with the Programmatic BOs.

Coordination of ASIP preparation within the ASIP team included meetings and informal communications throughout the ASIP preparation process.

1.9 Selection of ASIP-Covered Species

Table 1-3 lists the special-status species that occur, or that could occur, in the study area. Special-status species with the potential to occur in the study area were identified from:

- the MSCS, including the Programmatic USFWS and NOAA Fisheries BOs and the Programmatic NCCP Determination;
- a species list provided by the USFWS in November 2004 (Appendix A);
- a review of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California;
- a CNDDB search performed in January 2005;
- field surveys performed by DWR for the gate sites and channel dredging areas in 2000 and 2001;
- field surveys performed by DWR for the proposed dredge spoils drying areas in November 2004; and
- input from the ASIP team.

Specific information pertaining to field surveys and literature reviews performed and provided by DWR are included in the species assessments contained in Chapter 5 and the species accounts in Appendix B.

CALFED programmatic guidance documents require that impacts of implementing CALFED projects on species identified in the MSCS and other special-status species that could be affected by a project must be assessed. Only a subset of these species is covered under the Programmatic BOs and NCCP Determination. Species identified in the MSCS that are covered under the Programmatic BOs and NCCP Determination that are present or could be present in the study area are shown in Table 1-4. However, this ASIP addresses all federally and state-listed species that could occur in the study area. The SDIP

EIS/EIR includes an assessment of impacts on these species and mitigation measures for them.

An assessment was conducted, based on results of field surveys and review of relevant existing information, to determine the likelihood that species identified in the MSCS could be present in the study area and could be affected by SDIP implementation. Results of that assessment are presented in Table 1-4 and were used to determine the covered species to be evaluated in the ASIP. Species identified in the MSCS that met one or more of the following criteria are not further evaluated in this ASIP:

- the covered species is not likely to be present in the project area,
- habitat for the covered species is not present in the project area or affected by implementation of the SDIP outside the project area, or
- SDIP implementation would be highly unlikely to result in harm (i.e., injury or mortality) to individuals of the covered species.

Based on the application of these criteria, the covered species evaluated in this ASIP are listed in Table 1-1.

1.10 Critical Habitat

This ASIP:

- identifies critical habitat for federally listed, covered species in the study area;
- provides an assessment of impacts on critical habitat; and
- identifies conservation measures necessary to address impacts of SDIP implementation on critical habitat.

This information will be used by the USFWS and NOAA Fisheries to determine the likelihood for SDIP implementation to result in the destruction or adverse modification of designated critical habitat for federally listed species.

1.10.1 Current Critical Habitat Designated by NOAA Fisheries and USFWS

Federally listed species for which critical habitat has been designated and may be affected by implementation of the SDIP are the:

- Sacramento River winter-run Chinook salmon evolutionarily significant unit (ESU) (*Oncorhynchus tshawytscha*),
- Central Valley steelhead (*Oncorhynchus mykiss*),
- Central Valley spring-run Chinook salmon ESU,

Table 1-3. Special-Status Species with the Potential to Occur in the SDIP Study Area

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Mammals							
Berkeley kangaroo rat <i>Dipodomys heermanni berkeleyensis</i>		SC	–	–			
Fringed myotis bat <i>Myotis thysanodes</i>		SC	–	–			
Greater western mastiff-bat <i>Eumops perotis californicus</i>	m	SC	CSC	SC			
Long-eared myotis bat <i>Myotis evotis</i>		SC	–	–			
Long-legged myotis bat <i>Myotis volans</i>		SC	–	–			
Merced kangaroo rat <i>Dipodomys heermanni dixonii</i>	m	SC	–	SC			
Pacific western big-eared bat <i>Plecotus townsendii townsendii</i>		SC	CSC	–			
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	r	E	CE	–	X		X
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	r	E	CE/FP	–	X		X
Salt Marsh vagrant shrew <i>Sorex vagrans halicoetes</i>		SC	–	–			
Small-footed myotis bat <i>Myotis ciliolabrum</i>		SC	–	–			
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>		SC	–	–			
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	m	E	CT	–	X		
San Joaquin pocket mouse <i>Perognathus inornatus</i>		SC	–	–			
Riparian woodrat <i>Neotoma fuscipes riparia</i>	r	E	CSC	–	X		X
Suisun ornate shrew <i>Sorex ornatus sinuosus</i>	R	SC	CSC	–			
Yuma myotis bat <i>Myotis yumanensis</i>		SC	–	–			
Birds							
Alameda song sparrow <i>Melospiza melodia pusillula</i>		SC	CSC	–			
Aleutian Canada goose <i>Branta canadensis leucopareia</i>	m	D	–	–	X		X
Allen’s hummingbird <i>Selasphorus sasin</i>		SC	–	–			
American bittern <i>Botaurus lentiginosus</i>		SC	–	–			
American peregrine falcon <i>Falco peregrinus anatum</i>	m	D	CE/FP	–			X

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Bald eagle <i>Haliaeetus leucocephalus</i>	m	T	CE/FP	–	X		X
Bank swallow <i>Riparia riparia</i>	r	–	CT	–			X
Bell's sage sparrow <i>Amphispiza belli belli</i>		SC	CSC	–			
Black tern <i>Chlidonias niger</i>	m	–	CSC	SC			X
Black-crowned night-heron (rookery) <i>Nycticorax nycticorax</i>	m	–	–	SC			X
California black rail <i>Laterallus jamaicensis coturniculus</i>	r	–	CT/FP	SC			X
California brown pelican <i>Pelecanus occidentalis californicus</i>	m	E	CE/FP	–	X		
California clapper rail <i>Rallus longirostris obsoletus</i>	r	E	CE/FP	–	X		X
California horned lark <i>Eremophila alpestris actia</i>		–	CSC	–			
California least tern <i>Sterna antillarum browni</i>	m	E	CE/FP	–	X		
California thrasher <i>Toxostoma redivivum</i>		SC	–	–			
Common loon <i>Gavia immer</i>		SC	–	–			
Cooper's hawk <i>Accipiter cooperii</i>	m	–	CSC	–			X
Costa's hummingbird <i>Calypte costae</i>		SC	–	–			
Double-crested cormorant (rookery) <i>Phalacrocorax auritus</i>	m	–	CSC	–			X
Ferruginous hawk <i>Buteo regalis</i>		SC	CSC	–			
Grasshopper sparrow <i>Ammodramus savannarum</i>	m	–	–	SC			
Great blue heron (rookery) <i>Ardea herodias</i>	m	–	–	SC			X
Great egret (rookery) <i>Casmerodius albus</i>	m	–	–	SC			X
Greater sandhill crane <i>Grus canadensis canadensis</i>	r	–	CT/FP	–			X
Hermit warbler <i>Dendroica occidentalis</i>		SC	–	–			
Lawrence's goldfinch <i>Carduelis lawrencei</i>		SC	–	–			
Lewis' woodpecker <i>Melanerpes lewis</i>		SC	–	–			
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	r	–	–	SC			X

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Loggerhead shrike <i>Lanius ludovicianus</i>		SC	CSC	–			
Long-billed curlew <i>Numenius americanus</i>	m	SC	CSC	–			X
Marbled godwit <i>Limosa fedoa</i>		SC	–	–			
Mountain plover <i>Charadrius montanu</i>		SC	CSC	–			
Northern harrier <i>Circus cyaneus</i>	m	–	CSC	–			X
Nuttall's woodpecker <i>Picoides nuttallii</i>		SLC	–	–			
Oak titmouse <i>Baeolophus inornatus</i>		SLC	–	–			
Olive-sided flycatcher <i>Contopus cooperi</i>		SC	–	–			
Prairie falcon <i>Falco mexicanus</i>		SC	–	–			
Red-breasted sapsucker <i>Sphyrapicus ruber</i>		SC	–	–			
Red knot <i>Calidris cantus</i>		SC	–	–			
Rufous hummingbird <i>Selasphorus rufus</i>		SC	–	–			
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	r	SC	CSC	–			
San Pablo song sparrow <i>Melospiza melodia samuelis</i>	r	SC	CSC	SC			X
Short-eared owl <i>Asio flammeus</i>	m	–	CSC	–			X
Snowy egret (rookery) <i>Egretta thula</i>	m	–	–	SC			X
Suisun song sparrow <i>Melospiza melodia maxillaris</i>	r	SC	CSC	SC			X
Swainson's hawk <i>Buteo swainsoni</i>	r	–	CT	–			X
Tricolored blackbird <i>Agelaius tricolor</i>	m	SC	CSC	SC			X
Vaux's swift <i>Chaetura vauxi</i>		SC	–	–			
Western burrowing owl <i>Athene cunicularia hypugea</i>	m	SC	CSC	SC			X
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	m	T	CSC	–	X		X
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	r	C	CE	–			X
Whimbrel <i>Numenius phaeopus</i>		SC	–	–			

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
White-faced ibis <i>Plegadis chihi</i>	m	SC	CSC	SC			X
White-tailed kite <i>Elanus leucurus</i>	m	SC	FP	–			X
Reptiles							
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	m	T	CT	–	X		
Alameda whipsnake critical habitat		T	–	–			
California horned lizard <i>Phrynosoma coronatum frontale</i>		SC	CSC	–			
Giant garter snake <i>Thamnophis gigas</i>	r	T	CT	–	X		X
San Joaquin coachwhip <i>Masticophis flagellum ruddocki</i>		SC	–	–			
Silvery legless lizard <i>Anniella pulchra pulchra</i>		SC	CSC	–			
Western pond turtle <i>Clemmys marmorata</i>	m	SC	CSC	SC			X
Amphibians							
California red-legged frog <i>Rana aurora draytonii</i>	m	T	CSC	–	X		
California red-legged frog critical habitat (Proposed)							
California tiger salamander <i>Ambystoma californiense</i>	m	T	CSC	–	X		
California tiger salamander critical habitat (Proposed)							
Foothill yellow-legged frog <i>Rana boylei</i>	m	SC	CSC	–			
Western spadefoot toad <i>Spea hammondi</i>	m	SC	CSC	SC			
Fish							
Central California coast steelhead <i>Oncorhynchus mykiss</i>	m	T	CT	–			
Central California coho salmon <i>Oncorhynchus kisutch</i>		E	CE	–			
Central Valley fall-/late fall-run Chinook salmon ESU <i>Oncorhynchus tshawytscha</i> (fr)	R	C	CSC	–		X	
Central Valley spring-run Chinook salmon ESU <i>Oncorhynchus tshawytscha</i> (sr)	R	T	CT	–		X	X
Central Valley spring-run Chinook salmon ESU critical habitat		T				X	
Central Valley steelhead ESU <i>Oncorhynchus mykiss</i> (cv)	R	T	–	–		X	X
Central Valley steelhead ESU critical habitat		T				X	

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Delta smelt <i>Hypomesus transpacificus</i>	R	T	CT	–	X		X
Delta smelt critical habitat		T	–	–	X		
Green sturgeon <i>Acipenser medirostris</i>	R	PT	CSC	–		X	X
Kern Brook lamprey <i>Lampetra hubbsi</i>		SC	CSC	–			
Longfin smelt <i>Spirinchus thaleichthys</i>	R	SC	CSC	–			X
River lamprey <i>Lampetra ayresi</i>		SC	CSC	–			
Pacific lamprey <i>Lampetra tridentate</i>		SC	CSC	–			
Sacramento River winter-run Chinook salmon ESU <i>Oncorhynchus tshawytscha</i> (wr)	R	E	CE	–		X	X
Sacramento River winter-run Chinook salmon critical habitat		E	–	–			
Splittail <i>Pogonichthys macrolepidotus</i>	R	SC	CSC	–	X		X
Southern Oregon/northern California coho salmon ESU (<i>Oncorhynchus kisutch</i>)		T	CT	–			
Southern Oregon/northern California coho salmon critical habitat		T	–	–			
Tidewater goby <i>Eucyclogobius newberryi</i>	m	E	CSC	–			
Invertebrates							
Antioch andrenid bee <i>Perdita scitula antiochensis</i>		SC	–	–			
Antioch cophuran robberfly <i>Cophura hurdi</i>		SC	–	–			
Antioch Dunes anthicid beetle <i>Anthicus antiochensis</i>		SC	–	–			
Antioch efferian robberfly <i>Efferia antiochi</i>		SC	–	–			
Antioch mutillid wasp <i>Myromsula pacifica</i>		SC	–	–			
Antioch sphecid wasp <i>Philanthus nasilis</i>		SC	–	–			
California linderiella fairy shrimp <i>Linderiella occidentalis</i>		SC	–	–			
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	m	E	–	–			
Ciervo aegialian scarab beetle <i>Aegialia concinna</i>		SC	–	–			
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	m	E	–	–	X		

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Curved-foot hygrotus diving beetle <i>Hygrotus curvipes</i>		SC	–	–			
Hurd's metapogon robberfly <i>Metapogon hurdi</i>		SC	–	–			
Lange's metalark butterfly <i>Apodemia mormo langei</i>	R	E	–	–			
Longhorn fairy shrimp <i>Branchinecta longiantenna</i>	m	E	–	–	X		X
Marin elfin butterfly <i>Incisalia mossii marinensis</i>		SC	–	–			
Middlekauf's shieldback katydid <i>Idiostatus middlekaufi</i>		SC	–	–			
Mid-valley fairy shrimp <i>Branchinecta n. sp.</i> Amid-valley	m	–	–	SC			
Moestan blister beetle <i>Lytta moesta</i>		SC					
Molestan blister beetle <i>Lytta molesta</i>		SC	–	–			
Ricksecker's water scavenger beetle <i>Hydochara rickseckeri</i>		SC	–	–			
Sacramento anthicid beetle <i>Anthicus sacramento</i>		SC	–	–			
San Joaquin dune beetle <i>Coelus gracilis</i>		SC	–	–			
San Francisco lacewing <i>Nothochrysa californica</i>		SC	–	–			
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	R	T	–	–	X		
Valley elderberry longhorn beetle <i>critical habitat</i>		T	–	–			
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	m	T	–	–	X		
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>		E	–	–			
Yellow-banded andrenid bee <i>Perdita hirticeps luteocincta</i>		SC	–	–			
Plants							
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>		SLC	–	4			
Coast rock cress <i>Arabis blepharophylla</i>		SLC	–	4			
San Jacinto Valley crownscale <i>Atriplex coronata</i> var. <i>notatior</i>		E	–	1B			
Chaparral harebell <i>Campanula exigua</i>		SLC	–	1B			
Lemmon's jewelflower <i>Caulanthus coulteri</i> var. <i>lemmonii</i>		SLC	–	1B			

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Congdon's tarplant <i>Centromadia [Hemizonia] parryi</i> ssp. <i>congdonii</i>		SC	–	1B			
Franciscan thistle <i>Cirsium andrewsii</i>		SC	–	4			
California croton <i>Croton californicus</i>		SLC	–	–			
Livermore tarplant <i>Deinandra bacigalupii</i>		SC	–	1B			
Western leatherwood <i>Dirca occidentalis</i>		SLC	–	1B			
Tiburon buckwheat <i>Eriogonum luteolum</i> var. <i>caninum</i>		SLC	–	3			
Round-leaved filaree <i>Erodium macrophyllum</i>		–	–	2			
Stinkbells <i>Fritillaria agrestis</i>		SLC	–	4			
Fragrant fritillary <i>Fritillaria liliacea</i>		SC	–	1B			
Serpentine bedstraw <i>Galium andrewsii</i> spp. <i>gatense</i>		SLC	–	4			
Hoover's cryptantha <i>Cryptantha hooveri</i>		SLC	–	1B			
Loma Prieta hoita <i>Hoita strobilina</i>		SC	–	1B			
Oregon meconella <i>Meconella oregano</i>		SC	–	1B			
Robust monardella <i>Monardella villosa</i> ssp. <i>globosa</i>		SLC	–	1B			
Little mousetail <i>Myosurus minimus</i> spp. <i>apus</i>		SC	–	3			
Gairdner's yampah <i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>		SC	–	4			
California triquetrella moss <i>Triquetrella californica</i>		SLC	–	–			
Caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>		SC	–	1A			
Greene's tuctoria <i>Tuctoria greenei</i>	m	E	R	1B			
Large-flowered fiddleneck <i>Amsinckia grandiflora</i>	m	E	CE	1B	X		
Large-flowered fiddleneck critical habitat		E	–	–			
Pallid manzanita <i>Arctostaphylos pallida</i>	m	T	CE	1B	X		
Suisun Marsh aster <i>Aster lentus</i>	R	SC	–	1B/SC			X
Alkali milkvetch <i>Astragalus tener</i> var. <i>tener</i>	r	SC	–	1B/SC			X

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Heartscale <i>Atriplex cordulata</i>	m	SC	–	1B/SC			
Brittlescale <i>Atriplex depressa</i>	m	SC	–	1B/SC			
San Joaquin spearscale <i>Atriplex joaquiniana</i>	m	SC	–	1B/SC			
Big tarplant <i>Blepharizonia plumosa</i> ssp. <i>plumosa</i>	m	SC	–	1B			
Bristly sedge <i>Carex comosa</i>	m	–	–	2			X
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	m	SLC	–	–			
Salt marsh owl's-clover <i>Castilleja ambigua</i> ssp. <i>ambigua</i>		SLC					
Succulent owl's-clover <i>Castilleja campestris</i> ssp. <i>succulenta</i>	m	T	CE	1B	X		
Slough thistle <i>Cirsium crassicaule</i>	m	SC	–	1B/SC			X
Soft bird's-beak <i>Cordylanthus mollis</i> ssp. <i>mollis</i>	R	E	R	1B	X		X
Mt. Diablo bird's-beak <i>Cordylanthus nidularius</i>	m	SC	R	1B/SC			
Palmate-bracted bird's-beak <i>Cordylanthus palmatus</i>	m	E	CE	1B	X		
Hospital Canyon larkspur <i>Delphinium californicum</i> ssp. <i>interius</i>	m	SC	–	1B/SC			
Recurved larkspur <i>Delphinium recurvatum</i>	m	SC	–	1B/SC			
Ben Lomond buckwheat <i>Eriogonum nudum</i> var. <i>decurrens</i>	m	SC	–	1B			
Delta coyote-thistle <i>Eryngium racemosum</i>	r	–	CE	1B/SC			X
Contra Costa wallflower <i>Erysimum capitatum</i> ssp. <i>angustatum</i>	R	E	CE	1B	X		X
Contra Costa wallflower critical habitat		E	–	–			
Diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	m	SC	–	1B/SC			
Boggs Lake hedge-hyssop <i>Gratiola heterosepala</i>	m	–	CE	1B			
Diablo helianthella <i>Helianthella castanea</i>	m	SC	–	1B/SC			
Brewer's dwarf flax <i>Hesperolinon breweri</i>	m	SC	–	1B/SC			
Rose-mallow <i>Hibiscus lasiocarpus</i>	m	–	–	2			X
Santa Cruz tarplant <i>Holocarpha macradenia</i>	m	T	CE	1B	X		
Carquinez goldenbush <i>Isocoma arguta</i>	m	SC	–	1B/SC			X

Species Name	MSCS Species Goals ^a	Status ^b			Programmatic Coverage		
		Federal	State	Other	USFWS BO	NOAA Fisheries BO	NCCP Determination
Northern California black walnut (native stands) <i>Juglans californica</i> var. <i>hindsii</i>	r	SC	–	1B/SC			X
Contra Costa goldfields <i>Lasthenia conjugens</i>	m	E	–	1B	X		
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	R	SC	–	1B/SC			X
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	R	SC	R	1B/SC			X
Delta mudwort <i>Limosella subulata</i>	r	–	–	2			X
Showy madia <i>Madia radiata</i>	m	SC	–	1B			
Hall's bush mallow <i>Malacothamnus hallii</i>	m	SLC	–	1B			
Antioch Dunes evening-primrose <i>Oenothera deltooides</i> ssp. <i>howellii</i>	R	E	CE	1B	X		X
Antioch Dunes evening-primrose critical habitat		–	–	–	X		X
Mt. Diablo phacelia <i>Phacelia phacelioides</i>	m	SC	–	1B/SC			
Sanford's arrowhead <i>Sagittaria sanfordii</i>	m	SC	–	1B/SC			X
Rock sanicle <i>Sanicula saxatilis</i>	m	SC	R	1B/SC			
Marsh skullcap <i>Scutellaria galericulata</i>	m	–	–	2			
Mad-dog skullcap <i>Scutellaria lateriflora</i>	m	–	–	2			
Pacific cordgrass <i>Spartina folisa</i>		SLC	–	–			
Most beautiful jewel-flower <i>Streptanthus albidus</i> ssp. <i>peramoensus</i>	m	SC	–	1B			
Mt. Diablo jewelflower <i>Streptanthus hispidus</i>	m	SC	–	1B/SC			
Tiburon buckwheat <i>Eriogonum luteolum</i> var. <i>caninum</i>		SLC	–	3			
Western leatherwood <i>Dirca occidentalis</i>		SLC	–	1B			
Wright's trichocoronis <i>Trichocoronis wrightii</i> var. <i>wrightii</i>		–	–	2			

Notes:

USFWS = U.S. Fish and Wildlife Service.

MSCS = Multi-Species Conservation Strategy.

NOAA Fisheries = National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

BO = biological opinion.

NCCP = natural community conservation plan.

ESU = evolutionary significant unit.

^a Species Goals:

Species goals are only available for those species that were assigned a goal in the MSCS; therefore not all ASIP-evaluated species have a MSCS goal.

- R = Recover. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.
- r = Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.
- m = Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species.

^b Status:**Federal**

- E = Listed as endangered under the federal Endangered Species Act (ESA).
- T = Listed as threatened under ESA.
- PT = Proposed for listing as threatened under ESA.
- C = Candidate for listing under ESA.
- SC = Federal species of concern.
- SLC = Species of local concern.
- D = Species delisted.

State

- CE = Listed as endangered under the California Endangered Species Act (CESA).
- CT = Listed as threatened under CESA.
- R = Listed as rare under California Native Plant Protection Act.
- CSC = California species of special concern.
- FP = Fully protected under the California Fish and Game Code.

Other

- 1A = California Native Plant Society (CNPS) List 1A.
- 1B = CNPS List 1B.
- 2 = CNPS List 2.
- 3 = CNPS List 3.
- 4 = CNPS List 4.
- SC = Other species of concern identified by CALFED.

^c NOAA Fisheries proposed critical habitat for Central Valley spring-run Chinook salmon and Central Valley steelhead in December 2004. NOAA Fisheries published a final ruling on January 2, 2006.

^d Green sturgeon was proposed for listing as threatened by NOAA Fisheries in April 2005. This species was not covered under the NOAA Fisheries BO.

Table 1-4. Species That Are Proposed for Evaluation in the SDIP Project ASIP

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Mammals						
Berkeley kangaroo rat		SC	–	–	No	Outside species’ known range.
Fringed myotis bat		SC	–	–	No	Outside species’ known range.
Greater western mastiff-bat	m	–	CSC	SC	No	No suitable habitat in study area.
Long-legged myotis bat		SC	–	–	No	No suitable habitat in study area.
Merced kangaroo rat	m	–	–	SC	No	No suitable habitat in study area.
Pacific western big-eared bat		SC	CSC	–	No	Outside species’ known range.
Riparian brush rabbit	r	E	CE	–	Yes	Known occurrence within approximately 3 miles of head of Old River; however, there is no suitable habitat in the project areas. Implementation of SDIP is not expected to affect this species.
Salt marsh harvest mouse	r	E	CE/FP	–	No	Outside species’ known range. No suitable habitat in study area.
Small-footed myotis bat		SC	–	–	No	No suitable habitat in study area.
San Francisco dusky-footed woodrat		SC	–	–	No	Outside species’ known range.
Salt marsh vagrant shrew		SC	–	–	No	Outside species’ known range.
San Joaquin kit fox	m	E	CT	–	Yes	Species is not found in Delta; however, study area is in or near species’ range and kit fox occurrences are known in vicinity of Old River gate.
San Joaquin pocket mouse		SC	–	–	No	No suitable habitat in study area.
Riparian woodrat	r	E	CSC	–	No	Outside species’ known range.
Suisun ornate shrew	R	SC	CSC	–	No	Outside species’ known range. No suitable habitat in study area.
Yuma myotis bat		SC	–	–	No	No suitable habitat in study area.
Birds						
Alameda song sparrow		SC	CSC	–	No	Outside species’ known range.
Aleutian Canada goose	m	D	–	–	No	Species is winter resident in study area but will not be affected by project. Suitable foraging habitat occurs throughout study area.
Allen’s hummingbird		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
American bittern		SC	–	–	No	Marginal habitat present in study area, but species is not expected to occur in affected areas.
American peregrine falcon	m	D	CE/FP	–	No	Species may occur in study area during migration or winter but will not be affected by project.
Bald eagle	m	T	CE/FP	–	No	Species may occur in study area during migration or winter but will not be affected by project.
Bank swallow	r	–	CT	–	No	Outside species' known range. No suitable habitat in study area.
Bell's sage sparrow		SC	CSC	–	No	Outside species' known range.
Black tern	m	–	CSC	SC	No	Suitable habitat present in study area, but species is not expected to occur in affected areas and will not be affected by project.
Black-crowned night-heron (rookery)	m	–	–	SC	No	Species known to forage in study area. Suitable rookery sites present in study area. However, this ASIP includes analysis for listed species only.
California black rail	r	–	CT/FP	SC	Yes	Suitable habitat present in study area.
California brown pelican	m	E	CE/FP	–	No	Outside species' known range. No suitable habitat in study area.
California clapper rail	r	E	CE/FP	–	No	Outside species' known range. No suitable habitat in study area.
California horned lark		–	CSC	–	No	Suitable habitat present in study area, but species not expected to nest in study area.
California least tern	m	E	CE/FP	–	No	Outside species' known range. No suitable habitat in study area.
California thrasher		SC	–	–	No	Outside species' known range. No suitable habitat in study area.
Common loon		SC	–	–	No	Occasional winter resident in study area but will not be affected by project.
Cooper's hawk	m	–	CSC	–	No	Suitable habitat present in study area. However, this ASIP includes analysis for listed species only.
Costa's hummingbird		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Double-crested cormorant (rookery)	m	–	CSC	–	No	No CNDDB-recorded occurrences in study area. Species known to forage in study area. Suitable rookery sites present in study area, and species known to occur in affected areas.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Ferruginous hawk		SC	CSC	–	No	Suitable foraging habitat present in study area. Species may occur during migration or winter but will not be affected by project.
Grasshopper sparrow	m	–	–	SC	No	Outside species' known range. No suitable habitat in study area.
Great blue heron (rookery)	m	–	–	SC	No	One CNDDDB-recorded occurrence in study area. Suitable rookery sites present in study area. However, this ASIP includes analysis for listed species only.
Great egret (rookery)	m	–	–	SC	No	Species known to forage in study area. Suitable rookery sites present in study area. However, this ASIP includes analysis for listed species only.
Greater sandhill crane	r	–	CT/FP	–	Yes	Suitable winter foraging habitat present on agricultural and pasture lands in study area. Species has not been observed in study area and is not likely to occur in the project area.
Hermit warbler		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Lawrence's goldfinch		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Lewis' woodpecker		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Little willow flycatcher	r	–	–	SC	No	No suitable breeding habitat in study area. Species may occur in study area during migration but will not be affected by project.
Loggerhead shrike		SC	CSC	–	No	Suitable nesting habitat present in study area but not expected to be adversely affected by actions in affected areas.
Long-billed curlew	m	–	CSC	–	No	Species may occur in study area during migration but will not be affected by project.
Marbled godwit		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Mountain plover		SC	CSC	–	No	Winter resident. Species may forage in agricultural lands but will not be affected by project.
Northern harrier	m	–	CSC	–	No	Species known to nest and forage in study area. However, this ASIP includes analysis for listed species only.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Nuttall's woodpecker		SLC	–	–	No	Suitable habitat present in study area but not expected to be adversely affected by project actions.
Oak titmouse		SLC	–	–	No	No suitable habitat in study area.
Olive-sided flycatcher		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Prairie falcon		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Red-breasted sapsucker		SC	–	–	No	Potential winter resident. Species may forage in riparian woodland but will not be affected by project.
Red knot		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Rufous hummingbird		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Saltmarsh common yellowthroat	r	SC	CSC	–	No	Outside species' known range.
San Pablo song sparrow	r	SC	CSC	SC	No	Outside species' known range.
Short-eared owl	m	–	CSC	–	No	Suitable habitat present in study area. However, this ASIP includes analysis for listed species only.
Snowy egret (rookery)	m	–	–	SC	No	Species known to forage in study area. Suitable rookery sites present in study area. However, this ASIP includes analysis for listed species only.
Suisun song sparrow	r	SC	CSC	SC	No	Outside species' known range.
Swainson's hawk	r	–	CT	–	Yes	Suitable habitat present in study area.
Tricolored blackbird	m	SC	CSC	SC	No	Suitable habitat present in study area. However, this ASIP includes analysis for listed species only.
Vaux's swift		SC	–	–	No	Species may occur in study area during migration but will not be affected by project.
Western burrowing owl	m	SC	CSC	SC	No	Species known to occur in study area. However, this ASIP includes analysis for listed species only.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Western snowy plover	m	T	CSC	–	No	Suitable wintering habitat present in study area but will not be affected by project.
Western yellow-billed cuckoo	r	C	CE	–	No	No suitable habitat in study area.
Whimbrel		SC	–	–	No	No suitable breeding habitat in study area.
White-faced ibis	m	SC	CSC	SC	No	Species may occur during migration or as a winter resident but will not be affected by project.
White-tailed kite	m	SC	FP	–	Yes	Species known to occur in study area.
Reptiles						
Alameda whipsnake	m	T	CT	–	No	Outside species' known range.
Alameda whipsnake critical habitat		T	–	–		Study area is not within areas designated as critical habitat.
California horned lizard		SC	CSC	–	No	No suitable habitat in study area.
Giant garter snake	r	T	CT	–	Yes	Potential habitat present in study area.
San Joaquin coachwhip		SC	–	–	No	Marginal habitat present in study area, but suitable habitat does not occur in affected areas.
Silvery legless lizard		SC	CSC	–	No	No suitable habitat in study area.
Western pond turtle	m	–	CSC	SC	No	Species known to occur in study area. However, this ASIP includes analysis for listed species only.
Amphibians						
California red-legged frog	m	T	CSC	–	No	Outside species' known range.
California red-legged frog critical habitat (proposed)					No	Study area is not within areas designated as critical habitat.
California tiger salamander	m	T	CSC	–	No	No suitable habitat present in study area.
California tiger salamander critical habitat (proposed)					No	Study area is not within areas designated as critical habitat.
Foothill yellow-legged frog	m	SC	CSC	–	No	Outside species' known range.
Western spadefoot toad	m	–	CSC	SC	No	No suitable habitat in study area.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Fish						
Central California coast steelhead	m	SC	T	–	No	Outside species’ known range.
Central California coho salmon		E	T	–	No	Outside species’ known range.
Central Valley fall/late fall–run Chinook salmon ESU	R	C	CSC	–	No	May occur in study area during migration. However, this ASIP includes analysis for listed species only.
Central Valley spring-run Chinook salmon ESU	R	T	CT	–	Yes	May occur in study area during migration.
Central Valley spring-run Chinook salmon ESU critical habitat		T	–	–	Yes	Study area is within areas designated as critical habitat. NOAA Fisheries proposed critical habitat for Central Valley spring-run Chinook salmon in December 2004. NOAA Fisheries is required to publish a final ruling in August 2005.
Central Valley steelhead ESU	R	T	–	–	Yes	May occur in study area during migration.
Central Valley steelhead ESU critical habitat		T	–	–	Yes	Study area is within areas designated as critical habitat. NOAA Fisheries proposed critical habitat for Central Valley steelhead in December 2004. NOAA Fisheries is required to publish a final ruling in August 2005.
Delta smelt	R	T	CT	–	Yes	Suitable habitat present in study area.
Delta smelt critical habitat		T	–	–	Yes	Suitable habitat present in study area.
Green sturgeon	R	T	CSC	–	Yes	Suitable habitat present in study area. Green sturgeon was proposed for listing as threatened by NOAA Fisheries in April 2005. This species was not covered under the NOAA Fisheries BO.
Kern Brook lamprey		SC	CSC	–	No	Outside species’ known range.
Longfin smelt	R	SC	CSC	–	No	Suitable habitat present in study area. However, this ASIP includes analysis for listed species only.
River lamprey		SC	CSC	–	No	Suitable habitat present in study area but not expected to be affected by project.
Pacific lamprey		SC	CSC	–	No	Suitable habitat present in study area but not expected to be affected by project.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Sacramento River winter-run Chinook salmon ESU	R	E	CE	–	Yes	May occur in study area during migration.
Sacramento River winter-run Chinook salmon critical habitat		E	–	–	Yes	Study area is not within areas designated as critical habitat.
Southern Oregon/northern California coho salmon ESU		T	T	–	No	Outside species' known range.
Splittail	R	SC	CSC	–	No	Suitable habitat present in study area. However, this ASIP includes analysis for listed species only.
Tidewater goby	m	E	CSC	–	No	Outside species' known range.
Invertebrates						
Antioch andrenid bee		SC	–	–	No	No suitable habitat in study area.
Antioch cophuran robberfly		SC	–	–	No	No suitable habitat in study area.
Antioch Dunes anthicid beetle		SC	–	–	No	No suitable habitat in study area.
Antioch efferian robberfly		SC	–	–	No	No suitable habitat in study area.
Antioch mutillid wasp		SC	–	–	No	No suitable habitat in study area.
Antioch sphecid wasp		SC	–	–	No	No suitable habitat in study area.
California linderiella fairy shrimp		SC	–	–	No	No suitable habitat in study area.
Callippe silverspot butterfly	m	E	–	–	No	No suitable habitat in study area.
Ciervo aegialian scarab beetle		SC	–	–	No	No suitable habitat in study area.
Conservancy fairy shrimp	m	E	–	–	No	No suitable habitat in study area.
Curved-foot hygrotus diving beetle		SC	–	–	No	No suitable habitat in study area.
Hurd's metapogon robberfly		SC	–	–	No	No suitable habitat in study area.
Lange's metalark butterfly		SC	–	–	No	No suitable habitat in study area.
Longhorn fairy shrimp	m	E	–	–	No	No suitable habitat in study area.
Marin elfin butterfly		SC	–	–	No	No suitable habitat in study area.
Middlekauf's shieldback katydid		SC	–	–	No	No suitable habitat in study area.
Mid-valley fairy shrimp	m	–	–	SC	No	No suitable habitat in study area.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Moestan blister beetle		SC	–	–	No	No suitable habitat in study area.
Molestan blister beetle		SC	–	–	No	No suitable habitat in study area.
Ricksecker's water scavenger beetle		SC	–	–	No	No suitable habitat in study area.
Sacramento anthicid beetle		SC	–	–	No	No suitable habitat in study area.
San Joaquin dune beetle		SC	–	–	No	No suitable habitat in study area.
San Francisco lacewing		SC	–	–	No	No suitable habitat in study area.
Valley elderberry longhorn beetle	R	T	–	–	Yes	Within species' known range. Suitable habitat present in study area.
Valley elderberry longhorn beetle critical habitat		T	–	–	No	Study area is not within areas designated as critical habitat.
Vernal pool fairy shrimp	m	T	–	–	No	No suitable habitat in study area.
Vernal pool tadpole shrimp		E	–	–	No	No suitable habitat in study area.
Yellow-banded andrenid bee		SC	–	–	No	No suitable habitat in study area.
Plants						
Bent-flowered fiddleneck		SLC	–	4	No	Suitable habitat in study area. No CNDDDB records of observations within 5 miles of study area. Not observed during surveys.
Coast rock cress		SLC	–	4	No	Suitable habitat in study area. No CNDDDB records within 5 miles of study area. Not observed during surveys.
San Jacinto Valley crownscale		E	–	1B	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 4 miles west of project area. Not observed during surveys.
Chaparral harebell		SLC	–	1B	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 4 miles west of project area. Not observed during surveys.
Lemmon's jewelflower		SLC	–	1B	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 4 miles west of project area. Not observed during surveys.
Congdon's tarplant		SC	–	1B	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Franciscan thistle		SC	–	4	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
California Croton		SLC	–	–	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Livermore tarplant		SC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Recurved larkspur	m	SC	–	1B/SC	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 2 miles west of project area. Not observed during surveys.
Western leatherwood		SLC	–	1B	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Tiburon buckwheat		SLC	–	3	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Round-leaved filaree		–	–	2	No	No suitable habitat in study area. Historical occurrence that may be extant recorded 5 miles south of project area. Not observed during surveys.
Stinkbells		SLC	–	4	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Fragrant fritillary		SC	–	1B	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Serpentine bedstraw		SLC	–	4	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Boggs Lake hedge-hyssop	m	–	CE	1B	No	Not known from south Delta area. Not expected to occur in tidal habitats. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Hoover's cryptantha		SLC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Loma Prieta hoita		SC	–	1B	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Oregon meconella		SC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Robust monardella		SLC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Little mousetail		SC	–	3	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Gairdner's yampah		SC	–	4	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Wright's trichocoronis		–	–	2	No	Questionable habitat in study area. Historically recorded observation, presumed extant, occurred approximately 3 miles upstream of head of Old River fish control gate sites on San Joaquin River. Not observed during surveys.
California triquetrella moss		SLC	–	–	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Caper-fruited tropidocarpum		SC	–	1A	No	No suitable habitat in study area. Historical occurrences recorded approximately 2 miles west and south of project area. Not observed during surveys.
Greene's tuctoria	m	E	R	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Large-flowered fiddleneck	m	E	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Large-flowered fiddleneck critical habitat		E	—	—	No	Study area is not within areas designated as critical habitat.
Pallid manzanita	m	T	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Suisun Marsh aster	R	—	—	1B/SC	No	Populations occur along Old River, approximately 5 miles north of proposed dredging section. Not observed during surveys. However, this ASIP includes analysis for listed species only.
Alkali milkvetch	r	—	—	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Heartscale	m	—	—	1B/SC	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 3 miles west of project area. Not observed during surveys.
Brittlescale	m	—	—	1B/SC	No	No suitable habitat in study area. CNDDDB-recorded occurrence approximately 4 miles west of project area. Not observed during surveys.
San Joaquin spearscale	m	—	—	1B/SC	No	No suitable habitat in study area
Big tarplant	m	—	—	1B	No	Degraded habitat in study area. CNDDDB-recorded occurrence approximately 3 miles south of project area. Not observed during surveys.
Bristly sedge	m	—	—	2	No	No suitable habitat in study area. One possible extirpated occurrence approximately 3 miles north of project area. Not observed during surveys.
Mt. Diablo fairy-lantern		SLC	—	—	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Salt marsh owl's clover		SLC	–	–	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Succulent owl's-clover	m	T	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Slough thistle	m	SC	–	1B/SC	No	Historical occurrence recorded at confluence of Old River and San Joaquin River. Last seen in 1933 (CNDDDB 2002). Not observed during surveys. However, this ASIP includes analysis for listed species only.
Soft bird's-beak	R	E	R	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Mt. Diablo bird's-beak	m	SC	R	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Palmate-bracted bird's-beak	m	E	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Hospital Canyon larkspur	m	SC	–	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Ben Lomond buckwheat	m	SC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Delta coyote-thistle	r	–	CE	1B/SC	Yes	Suitable habitat in study area. Extirpated CNDDDB-recorded occurrence approximately 1 mile south of project area. Not observed during surveys.
Contra Costa wallflower	R	E	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Contra Costa wallflower critical habitat		E	—	—	No	Study area is not within areas designated as critical habitat.
Diamond-petaled California poppy	m	SC	—	1A/SC	No	No suitable habitat in study area. Historical occurrence recorded approximately 3 miles west of project area. Not observed during surveys.
Diablo helianthella	m	SC	—	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Brewer's dwarf flax		SC		1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Brewer's western flax	m	—	—	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Rose-mallow	m	—	—	2	No	Present throughout south Delta. Populations occur along West Canal dredging area, Grant Line Canal/Fabian and Bell Canal, and Middle River gate site. However, this ASIP includes analysis for listed species only.
Santa Cruz tarplant	m	T	CE	1B	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Carquinez goldenbush	m	SC	—	1B/SC	No	Suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Northern California black walnut (native stands)	r	SC	—	1B/SC	No	Scattered trees occur throughout south Delta, but not entire stands. No CNDDDB-recorded occurrences within 5 miles of project area. One tree is present near Grant Line site.
Contra Costa goldfields	m	E	—	1B	No	Not known from south Delta area. Not expected to occur in tidal habitats. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Delta tule pea	R	SC	—	1B/SC	No	Populations occur in Middle River, approximately 3 miles northeast of Middle River gate site and beyond. Not observed during surveys. However, this ASIP includes analysis for listed species only.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Mason's lilaeopsis	R	SC	R	1B/SC	Yes	Present throughout project area, including Old River and West Canal dredging areas, Middle River site, Grant Line site, Grant Line/Fabian and Bell Canal dredging area, and adjacent to Old River site and upstream dredging areas.
Delta mudwort	r	–	–	2	No	Several populations occur along Middle River and Victoria and North Canals; several sites within West Canal dredging area. However, this ASIP includes analysis for listed species only.
Showy madia	m	–	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Hall's bush mallow	m	SLC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Antioch Dunes evening-primrose	R	E	CE	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Antioch Dunes evening-primrose critical habitat		E	–	–	No	Study area is not within areas designated as critical habitat.
Mt. Diablo phacelia	m	SC	–	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Sanford's arrowhead	m	SC	–	1B/SC	No	Suitable habitat in study area, but project area is nearly 25 miles from nearest CNDDDB record. Project area is likely outside of species' range. Not observed during surveys. However, this ASIP includes analysis for listed species only.
Rock sanicle	m	SC	R	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Marsh skullcap	m	–	–	2	No	Suitable habitat in study area. One recorded site, out of normal range for species, is 3 miles north of Middle River gate site. Not observed during surveys.

Table 1-4. Continued

Species Name	MSCS Species Goals ^a	Status ^b			Further Evaluated in ASIP?	Explanation for Inclusion or Exclusion from Further Evaluation in This ASIP
		Federal	State	Other		
Mad-dog skullcap	m	–	–	2	No	No suitable habitat in study area.
Pacific cordgrass		SLC	–	–	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Most beautiful jewel-flower	m	SC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Mt. Diablo jewelflower	m	SC	–	1B/SC	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Tiburon buckwheat		SLC	–	3	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Western leatherwood		SLC	–	1B	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.
Wright's trichocoronis		–	–	2	No	No suitable habitat in study area. No CNDDDB-recorded occurrences within 5 miles of project area. Not observed during surveys.

Notes:

USFWS = U.S. Fish and Wildlife Service.

MSCS = multi-species conservation strategy.

NOAA Fisheries = National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

BO = biological opinion.

ESU = evolutionary significant unit.

CNDDDB = California Natural Diversity Database.

^a Species Goals:

R = Recover. Recover species' populations within the MSCS focus area to levels that ensure the species' long-term survival in nature.

r = Contribute to recovery. Implement some of the actions deemed necessary to recover species' populations within the MSCS focus area.

m = Maintain. Ensure that any adverse effects on the species that could be associated with implementation of CALFED actions will be fully offset through implementation of actions beneficial to the species.

^b Status:

Federal

E = Listed as endangered under the federal Endangered Species Act (ESA).

T = Listed as threatened under ESA.

PT = Proposed for listing as threatened under ESA.

C = Candidate for listing under ESA.

SC = Federal species of concern.

SLC = Species of local concern.

D = Species delisted.

State

CE = Listed as endangered under the California Endangered Species Act (CESA).

CT = Listed as threatened under CESA.

R = Listed as rare under California Native Plant Protection Act.

CSC = California species of special concern.

FP = Fully protected under the California Fish and Game Code.

Other

1A = California Native Plant Society (CNPS) List 1A.

1B = CNPS List 1B.

2 = CNPS List 2.

3 = CNPS List 3.

4 = CNPS List 4.

SC = Other species of concern identified by CALFED.

- Coho salmon (*O. kisutch*), and
- delta smelt (*Hypomesus transpacificus*).

1.10.2 Proposed Critical Habitat by NMFS

On December 10, 2004, NMFS Southwest Region proposed critical habitat for two ESUs of Chinook salmon and five ESUs of anadromous steelhead. The proposed critical habitat in the study area includes the San Joaquin Delta Hydrologic Unit (No. 5544).

NOAA Fisheries prepared a memorandum in January 2005 to provide guidance on conferencing. A copy of this memorandum is provided in Appendix C.

As stated in the NOAA Fisheries memorandum,

In accordance with 50 CFR 402.10, action agencies are required to confer with NOAA Fisheries if they determine that a Federal action under their discretion would “result in the destruction or adverse modification of proposed critical habitat.” Approximately 30 days after the final rule is published (mid-September 2005) it becomes effective and action agencies will be required to consult on proposed actions and reinitiate consultation for ongoing Federal actions that “may affect” designated critical habitat. Reinitiation of an existing consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if a new species is listed or critical habitat designated that may be affected by the action (50 CFR 402.16(d)).

The NOAA Fisheries memorandum also states that,

After the final rule becomes effective, all ongoing actions, actions currently undergoing consultation, and actions proposed for consultation during the next six months should be fully compliant with section 7(a)(2).

DWR and Reclamation will confer with NOAA Fisheries to ensure that SDIP actions that may affect critical habitat for Central Valley spring-run Chinook salmon and Central Valley steelhead are adequately addressed in this ASIP.

1.11 Essential Fish Habitat

This ASIP provides information and conservation measures necessary to address impacts of SDIP implementation on MSA-managed species and their EFH. Section 305(b)(2)-(4) of the MSA requires federal action agencies (e.g., Reclamation) to consult with NOAA Fisheries on any action authorized, funded, or undertaken that may adversely affect EFH. Species for which EFH is assessed in this ASIP are identified in Table 1-1.

For this project, the EFH assessment is integrated into this ASIP, and the EFH consultation process will be integrated into the NOAA Fisheries Programmatic BO for the project. NOAA Fisheries will provide EFH conservation recommendations for any action that would adversely affect EFH.

1.12 Selection of Natural Communities

The MSCS identified 20 natural communities: 18 habitats and two ecologically based fish groups. The natural communities that are present in the project area and that could be affected by SDIP implementation were identified from a review of vegetation mapping survey data collected and provided by DWR. The vegetation mapping data were then classified based on the list of communities in the Programmatic NCCP Determination (California Department of Fish and Game 2000a).

Six of the 20 natural communities that were identified in the MSCS are present in the SDIP project area:

- tidal perennial aquatic,
- tidal freshwater emergent,
- valley/foothill riparian,
- upland cropland,
- anadromous fish species group, and
- estuarine fish species group.

Table 1-2 lists the natural communities identified in the MSCS that are present in the project area and identifies the MSCS goals for each of the communities. In addition, this table correlates each of the natural habitats to the habitat subtypes that are likely to be affected by SDIP implementation and that are assessed in this ASIP. Both of the ecologically based fish groups identified in the MSCS (i.e., anadromous fish species and estuarine fish species) are present in the project area. All of the fish species covered under this ASIP are included in one of these fish groups.

1.13 ASIP-Covered Species Goals

The MSCS has established programmatic goals for each of the ASIP-covered species. It is the collective commitment of the CALFED Program to achieve the MSCS goals over the term of the Programmatic BOs and NCCP Determination. Relative to achieving these goals, some CALFED projects, including the SDIP, will not directly contribute toward achieving these goals, some projects will partially contribute to these goals, and some projects will be specifically designed to achieve these goals. All CALFED projects, however, must fully mitigate adverse impacts of the project on ASIP-covered species.

As a water delivery reliability project, SDIP is not intended to contribute to the conservation or recovery of ASIP-covered species. However, head of Old River fish control gate will reduce the movement of San Joaquin basin juvenile Chinook salmon into the south Delta, thereby increasing protection of this species and potentially contributing to recovery. DWR will also implement several environmental enhancement measures that may contribute to recovery of covered species (Chapter 2). The SDIP establishes the following goals for the ASIP-covered species.

- Avoid, minimize, and fully mitigate the adverse impacts of SDIP actions, including mitigation measures identified in the SDIP EIS/EIR, and ASIP implementation on covered species. DWR will also implement environmental enhancements that are not required to compensate for/mitigate impacts on ASIP-covered species but will provide a benefit to ASIP-covered species within and/or outside the study area.

1.14 Summary of Impacts on ASIP-Covered Species and Natural Communities

Table 1-5 summarizes the impacts of implementing SDIP project components and mitigation measures on CALFED Program-covered species. Table 1-6 summarizes the impacts of implementing SDIP project components and mitigation measures on ASIP-covered species and Table 1-7 provides a summary of adverse impacts and ASIP conservation measures for natural communities. A detailed description of project impacts and mitigation measures for natural communities and ASIP-covered species is provided in Chapters 4 and 5.

1.15 Organization of This Report

This report is made up of the following chapters and appendices:

- Chapter 1, “Introduction,” provides an overview of the project, the SDIP, and the ASIP process.
- Chapter 2, “Project Description,” describes the project objectives, purpose, and background; need for the action; SDIP components; and environmental commitments.
- Chapter 3, “Approach to Impact Assessment and Development of Conservation Measures to Avoid, Minimize, and Compensate for Impacts,” describes the environmental baseline, actions affecting biological resources (impact mechanisms), methods used to assess project impacts, development of conservation measures, and CALFED Program contributions to recovery.
- Chapter 4, “Natural Community Assessment and Conservation Measures,” describes the status of each natural community, the impacts of the project on

each natural community, and the conservation measures that will be implemented to avoid, minimize, and compensate for each impact.

- Chapter 5, “Assessment of Project Impacts on ASIP-Covered Species and Conservation Measures,” includes the current status of each covered species and the impacts of the project on the species and identifies conservation measures that will be implemented to avoid, minimize, and compensate for each impact.
- Chapter 6, “Cumulative Impacts,” describes the likely impacts on federally listed, covered species of future nonfederal activities, including future state, tribal, local, and private actions, that are reasonably certain to occur in the project area, in combination with the project.
- Chapter 7, “Monitoring Program,” describes the SDIP ASIP monitoring plan, including compliance monitoring, effectiveness monitoring, and reporting.
- Chapter 8, “Changed Circumstances, Remedial Measures, and Adaptive Management,” describes the conservation measures that are subject to modification through adaptive management, the adaptive management process, and the changed circumstances that could require implementation of remedial measures should they occur.
- Chapter 9, “Funding Mechanisms,” describes the funding sources for implementing the conservation measures presented in this document and an estimate for the cost of implementing those conservation measures.
- Chapter 10, “Alternatives to Take Considered and Rejected,” describes the alternatives to take of each federally listed species that were considered and rejected.
- Chapter 11, “List of Preparers,” lists the staff who prepared this report.
- Chapter 12, “References Cited,” lists the references cited in this report.
- Appendix A, “Species Lists,” provides a copy of the USFWS list of special-status species with the potential to occur in the study area.
- Appendix B, “Species Accounts of ASIP-Covered Species with the Potential to Occur in the Study Area,” provides a description of the ASIP-covered species.
- Appendix C, “NOAA Fisheries Memorandum Providing Guidance on Conferencing on Proposed Critical Habitat,” provides a copy of the NOAA Fisheries memorandum related to the proposed critical habitat designation for Central Valley spring-run Chinook salmon and Central Valley steelhead.
- Appendix D, “U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance,” provides a copy of the USFWS guidelines for protection San Joaquin kit fox.
- Appendix E, “California Department of Fish and Game Mitigation Guidelines for Swainson’s Hawk,” provides a copy of the DFG staff report on mitigation for impacts on Swainson’s hawk.

Table 1-5. Summary of Impacts on ASIP-Covered Species

Species Name	Status ^a			Impact on Species		
	Federal	State	Other	No Effect	May Affect, May Adversely Affect	May Affect Designated Critical Habitat
Mammals						
Riparian brush rabbit	E	CE	–	X		
San Joaquin kit fox	E	CT	–		X	
Birds						
California black rail	–	CT/FP	SC		X	
Greater sandhill crane	–	CT/FP	–	X		
Swainson's hawk	–	CT	–		X	
White-tailed kite	SC	FP	–		X	
Reptiles						
Giant garter snake	T	CT	–		X	
Fish						
Central Valley spring-run Chinook salmon ESU	T	CT	–		X	
Central Valley steelhead ESU	T	–	–		X	
Delta smelt	T	CT	–		X	X
Green sturgeon	PT	CSC	–		X	
Sacramento River winter-run Chinook salmon ESU	E	CE	–		X	X
Invertebrates						
Valley elderberry longhorn beetle	T	–	–		X	
Plants						
Delta coyote-thistle	-	CE	1B/SC		X	
Mason's lilaeopsis	SC	R	1B/SC		X	

Note: ESU = evolutionary significant unit.

^a Status:

Federal

E = Listed as endangered under the federal Endangered Species Act (ESA).

T = Listed as threatened under ESA.

C = Candidate for listing under ESA.

SC = Federal species of concern.

State

CE = Listed as endangered under the California Endangered Species Act (CESA).

CT = Listed as threatened under CESA.

R = Listed as rare under California Native Plant Protection Act.

CSC = California species of special concern.

FP = Fully protected under the California Fish and Game Code.

Other

1B = CNPS List 1B.

2 = CNPS List 2.

SC = Other species of concern identified by CALFED.

Table 1-6. Summary of Adverse Impacts and ASIP Conservation Measures for ASIP-Covered Species

Species	Impact ¹	ASIP Conservation Measure	SDIP EIS/EIR Mitigation Measures Associated with ASIP Conservation Measures
Federally Listed Species (USFWS responsibility)			
San Joaquin kit fox	Loss or disturbance of San Joaquin kit fox or suitable habitat as a result of gate construction and channel dredging	SJKF-1—Implement Mitigation Measure SJKF1	SJKF1—Conduct Preconstruction Surveys for San Joaquin Kit Fox
		SJKF-2—Implement Mitigation Measure SJKF2	SJKF2—Minimize Construction-Related Disturbances near Active Den Sites
		SJKF-3—Implement Mitigation Measure SJKF3	SJKF3—Replace Lost Habitat
Riparian brush rabbit	None	Not applicable	Not applicable
Giant garter snake	Loss of giant garter snake or suitable habitat for giant garter snake as a result of gate construction and channel dredging	GGSN-1—Implement Mitigation Measure GGSN1	GGSN1—Conduct Preconstruction Surveys for Giant Garter Snake
		GGSN-2—Implement Mitigation Measures GGSN2 and GGSN3	GGSN2—Minimize Construction-Related Disturbances in the Vicinity of Occupied Habitat
			GGSN3—Replace Lost Habitat
Delta smelt	Loss of delta smelt as a result of gate construction, gate operation, and channel dredging	DESM-1—Implement Mitigation Measure DESM1	DESM1—Implement Environmental Commitments
		DESM-2—Implement Mitigation Measure DESM2	DESM2—Compensate for Loss of Habitat or Disturbance
Valley elderberry longhorn beetle	Loss of valley elderberry longhorn beetle from gate construction and channel dredging	VELB-1—Implement Mitigation Measure VELB1	VELB1—Perform a Preconstruction and Postconstruction Survey for Elderberry Shrubs
		VELB-2—Implement Mitigation Measures VELB2 and VELB3	VELB2—Avoid and Minimize Impacts on Elderberry Shrubs VELB3—Compensate for Unavoidable Impacts on Elderberry Shrubs
Federally Listed Species (NOAA Fisheries responsibility)			
Central Valley spring-run Chinook salmon	Loss of salmonids as a result of gate construction, gate operation, and channel dredging	CHSA-1—Implement Mitigation Measure CHSA1	CHSA1—Implement Environmental Commitments
Sacramento River winter-run Chinook salmon		CHSA-2—Implement Mitigation Measure CHSA2	CHSA2—Compensate for Loss of Habitat or Disturbance
Central Valley steelhead			

Table 1-6. Continued

Species	Impact ¹	ASIP Conservation Measure	SDIP EIS/EIR Mitigation Measures Associated with ASIP Conservation Measures
Green sturgeon	Loss of green sturgeon as a result of gate construction, gate operation, and channel dredging	GRST-1—Implement Mitigation Measure GRST1 and GRST2	GRST1—Implement Environmental Commitments
English sole and starry flounder Essential Fish Habitat (EFH) species	None	Not applicable	Not applicable
State-listed Species (DFG responsibility)			
California black rail	Loss or disturbance of California black rail or suitable nesting habitat as a result of gate construction and channel dredging	BLRA-1—Implement Mitigation Measure BLRA1	BLRA1—Conduct Preconstruction Surveys For California Black Rail
		BLRA-2—Implement Mitigation Measure BLRA2	BLRA2—Minimize Construction-Related Disturbances in the Vicinity of Active Nest Sites
		BLRA-3—Implement Mitigation Measure BLRA3	BLRA-3—Avoid Removal of Breeding Habitat during the Nesting Season
		BLRA-4—Implement Mitigation Measure BLRA4	BLRA4—Replace Lost Breeding Habitat
Greater sandhill crane	None	Not applicable	Not applicable
Swainson's hawk	Loss or disturbance of Swainson's hawk nests or foraging habitat as a result of gate construction and channel dredging	SWHA-1—Implement Mitigation Measures SWHA1 and SWHA3	SWHA1—Conduct Preconstruction Surveys to Locate Swainson's Hawk Nest Sites SWHA3—Avoid Removal of Occupied Nest Sites
		SWHA-2—Implement Mitigation Measure SWHA2	SWHA2—Minimize Construction-Related Disturbances within ½ Mile of Active Nest Sites
		SWHA-3—Implement Mitigation Measure SWHA4	SWHA4—Replace Lost Foraging and Nesting Habitat
White-tailed kite	Loss or disturbance of raptor nest sites as a result of gate construction and channel dredging	WTKI-1—Implement Mitigation Measure WTKI1	WTKI1—Conduct Preconstruction Surveys to Locate White-Tailed Kite Nest Sites
		WTKI-2—Implement Mitigation Measures WTKI2	WTKI2—Minimize Construction-Related Disturbances within ¼ Mile of Active Nest Sites
		WTKI-3—Implement Mitigation Measures WTKI3	WTKI3—Avoid Removal of Occupied Nest Sites

Table 1-6. Continued

Species	Impact ¹	ASIP Conservation Measure	SDIP EIS/EIR Mitigation Measures Associated with ASIP Conservation Measures
		WTKI-4—Implement Mitigation Measures WTKI4 and WTKI5	WTKI4—Replace Lost Breeding Habitat WTKI5—Replace Lost Foraging Habitat
Delta smelt	Loss of delta smelt as a result of gate construction, gate operation, and channel dredging	See information above under “Federally Listed Species (USFWS responsibility)”	See information above under “Federally Listed Species (USFWS responsibility)”
Delta coyote-thistle	Loss of delta coyote-thistle as a result gate construction and channel dredging	DECT-1—Implement Mitigation Measure DECT1	DECT1—Conduct Preconstruction Surveys for Special-Status Plants
		DECT-2—Implement Mitigation Measure DECT2	DECT2—Avoid and Minimize Impacts on Delta Coyote-Thistle
		DECT-3—Implement Mitigation Measure DECT3	DECT3—Compensate for Loss of Occupied Habitat
Mason’s lilaeopsis	Loss of Mason’s lilaeopsis stands and potential habitat as a result of gate operation and channel dredging	MALI-1—Implement Mitigation Measures MALI1, MALI2, MALI3, and MALI5	MALI1—Conduct Preconstruction Surveys for Covered Plant Species MALI2—Map Tidal Mudflat Habitat in the Project Area MALI3—Avoid and Minimize Impacts on Mason’s Lilaeopsis MALI5—Monitor Existing Stands of Mason’s Lilaeopsis during the Gate Operations Phase
		MALI-2—Implement Mitigation Measure MALI4	MALI4—Compensate for Loss of Mason’s Lilaeopsis

Notes:

DFG = California Department of Fish and Game.

EFH = essential fish habitat.

NOAA Fisheries = National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

SWP = State Water Project.

USFWS = U.S. Fish and Wildlife Service.

¹ This table does not include impacts that will be covered by implementation of the environmental commitments identified in Chapter 2.

Table 1-7. Summary of Adverse Impacts and ASIP Conservation Measures for Natural Communities

Natural Community	Impact	ASIP Conservation Measure	SDIP EIS/EIR Mitigation Measures Associated with ASIP Conservation Measures
Natural Habitats			
Tidal perennial aquatic	Loss or disturbance of tidal perennial aquatic habitat as a result of gate construction and channel dredging	TPAQ-1—Implement Mitigation Measure TPAQ1	TPAQ1—Avoid and Minimize Disturbance of Tidal Perennial Aquatic Habitat
		TPAQ-2—Implement Mitigation Measure TPAQ2	TPAQ2—Compensate for Loss of Tidal Perennial Aquatic Habitat
Tidal freshwater emergent	Loss of tule and cattail tidal emergent wetland and jurisdictional riparian communities as a result of gate construction and channel dredging	TTEW-1—Implement Mitigation Measures TTEW1 and TTEW3	TTEW1—Avoid and Minimize Disturbance of Tule and Cattail Tidal Emergent Wetland Habitat TTEW3—Monitor Existing Stands of Tidal Emergent Wetland Vegetation during the Gate Operations Phase
		TTEW-2—Implement Mitigation Measure TTEW2	TTEW2—Compensate for Loss of Tule and Cattail Tidal Emergent Wetland Habitat
Valley/foothill woodland and forest	Loss of nonjurisdictional woody riparian communities as a result of gate construction and channel dredging activities	VFRC-1—Implement Mitigation Measure VFRC1	VFRC1—Avoid and Minimize Disturbance of Riparian Habitat
		VFRC-2—Implement Mitigation Measure VFRC2	VFRC2—Compensate for Temporary and Permanent Loss of Riparian Habitats
Upland cropland	Loss of agricultural land as a result of gate construction and channel dredging	UPCR-1—Implement Mitigation Measure UPCR1	UPCR1—Avoid and Minimize Disturbance of Upland Cropland Habitat
		UPCR-2— Implement Mitigation Measure UPCR2	UPCR2—Compensate for Loss of Upland Cropland Habitat
Fish Species Group			
Estuarine fish species ^a	Refer to impacts on tidal perennial aquatic and tule and cattail tidal emergent wetland	Refer to conservation measures for tidal perennial aquatic and tule and cattail tidal emergent wetland	Refer to conservation measures for tidal perennial aquatic and tule and cattail tidal emergent wetland

Table 1-7. Continued

Natural Community	Impact	ASIP Conservation Measure	SDIP EIS/EIR Mitigation Measures Associated with ASIP Conservation Measures
Anadromous fish species ^b	Refer to impacts on tidal perennial aquatic and tule and cattail tidal emergent wetland	Refer to conservation measures for tidal perennial aquatic and tule and cattail tidal emergent wetland	Refer to conservation measures for tidal perennial aquatic and tule and cattail tidal emergent wetland
<p>Notes:</p> <p>Estuarine fish species include delta smelt and longfin smelt.</p> <p>Anadromous fish species include Sacramento River winter-run Chinook salmon, Central Valley fall-/late-fall run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, green sturgeon, and splittail.</p> <p>EIS/EIR = environmental impact statement/environmental impact report.</p>			

- Appendix F, “California Department of Fish and Game Staff Report on Burrowing Owl Mitigation,” provides a copy of the DFG staff report on mitigation for impacts on burrowing owl.
- Appendix G, “Scientific Names of Species Mentioned in This Report,” lists the common and scientific names of species mentioned in this report.

1.16 Note about Units Used in This Report

Most of the data related to this project were collected using standard units (e.g., miles, feet). Data collected using metric units are presented in standard units with the metric units shown in parentheses. Temperature is presented in both degrees Fahrenheit (°F) and degrees Celsius (°C).